

The CENTRE

Food Processing Development Centre



AUGUST 1999

The Agricultural Value-added Engineering Centre Becomes Part of the Food Processing Development Centre

The Agricultural Value-added Engineering Centre (AVEC) became a functional part of the Food Processing Development Centre (FPDC) on April 6, 1999 as a result of organizational re-structuring at Alberta Agriculture, Food and Rural Development.

John Chang, AVEC's program manager, says that the integration into the Food Processing Development Centre generates operational and synergy benefits that will improve service to processors.

AVEC was started in June of 1997 with the assistance of program funding from the Agriculture and Food Council through the Canadian Adaptation and Rural Development Fund (CARDF).

It provides engineering support to the agriculture processing industry to help it grow and prosper. The three components in AVEC are a research centre, a resource centre and a financial assistance program.

Through its research centre, AVEC conducts research and development in partnership with industry. Its purpose is to find solutions and develop information to address industry's problems.

The resource centre provides easy access to a wide variety of information sources. It has computerized search capability for scientific and technical literature. This assists in problem solving and planning. AVEC's specialists can provide technical consultation and advisory services in trouble shooting, process development and the planning of processing operations.

Finally, project financial assistance is available on a cost-shared basis to companies, organizations or individuals for eligible projects

relating to the development and adoption of innovative processing technologies, systems and facilities.

AVEC is working on a wide range of projects, relating to both food and non-food processing. Examples of AVEC's projects include:

- developing improved methods for storing sugar beets to minimize sugar losses
- the measurement of properties of special crops, relevant to their storage and processing
- the cooling of fruits and vegetables using ice-based systems to preserve quality
- designing a heat treatment protocol for hay for the export market
- the effects of the drying process on the quality of Echinacea roots
- the utilization of hemp fibre in building panels

AVEC is interested in problems and issues that are important to the agricultural processing industry. For further information or to discuss a particular need, contact:

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You may also visit our Internet site at:
<http://www.agric.gov.ab.ca/navigation/food/non-food/index.html>.



**AVEC's RESEARCHER, REECE SHULAR,
MEASURING THE AIR FLOW RESISTANCE
PROPERTIES OF PEAS**

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Farewell to Susan Lutz

In February of 1999, Susan Lutz left Alberta and the Centre so she could join her husband Dan, who is now working with Agriculture and Agri-Food Canada in Guelph, Ontario.

Lutz began work at the Food Processing Development Centre shortly after it opened in 1984. As a product development scientist, she brought expertise in flavors, stabilizers and sensory evaluation.

Lutz made many contributions to the Centre's operations, including the computerization of the dialogue information retrieval services. In 1994, she completed her Ph.D. with Alberta Agriculture Research Institute funded research that used both consumer and trained sensory panels to evaluate the effect of processing methods on saskatoon berry juice. This kind of research was directly applicable to Alberta's saskatoon industry.

In 1993, Lutz was named projects manager at the Centre. In this position, she was responsible for the co-ordination of industry product and process development projects, as well as joint research proposals with other institutions. Lutz has provided many presentations outlining the Centre's capabilities and successes. She also gave presentations for university classes and industry workshops on product development, sensory evaluation and functional foods. She has published and/or presented results from a number of Centre research projects.

Since 1997, Lutz has been on secondment at the University of Alberta, where she worked to establish Alberta's Functional Foods Centre of Excellence. In 1998, she continued to coordinate the Canadian Functional Foods Network.

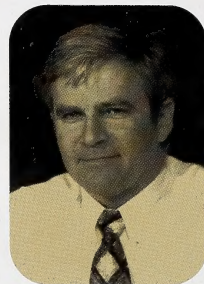
Throughout her 15 years at the Centre, Lutz has made tremendous contributions to Alberta's processing industry. Her cheerfulness and her expertise will be missed, but we all wish her well in her new home.



Robert Gibson Appointed as Projects Manager

Bob Gibson, the Food Processing Development Centre's senior meat scientist since 1989, has been named projects manager at the Centre.

Prior to joining the Centre, Gibson worked extensively in management capacities in the private sector. He assisted in the opening of UFL Foods, created the Food Service Division for Gainers Inc., was the research and development person for the Alberta Cattle Commission, and assisted in the merger of Van's Quality Foods and Lilydale Cooperative Ltd.



Gibson's work at the Centre has included: maintaining the facility's status as Establishment 442 for meat processing under federal legislation; meat product development; and, presentations, demonstrations, and short courses for meat inspectors and processors. Gibson's collaborative work with universities and research organizations has resulted in a number of important meat industry projects.

Gibson's appointment provides a seamless transition for the Centre's activities. For the past two years, while Susan Lutz was seconded to work on setting up a functional foods network, he has maintained the projects manager's role. While acting in this position, he has been responsible for co-ordinating all of the Centre's product development and joint research activities. He has also been instrumental in developing joint research proposals, attracting industry partners and obtaining funding for several large initiatives, such as the New Beef Products initiative.

"I'd like to continue with the program approach to the Centre's role in product and process development," notes Gibson.

"Our programs: meat, crops, dairy, sensory, packaging, and specialty foods, all utilize the expertise of several staff members. This allows us to co-ordinate the service we offer to our clients."

EQUIPMENT CORNER

INSTRON

The Product Development Laboratory has a new Instron. This machine is used in the product development lab to measure parameters such as how much force it takes to crush a cake, or how much strength it takes to pull noodles apart or shear through a piece of meat. It can also measure the viscosity of mixtures such as jellies. Our new Instron is computer-driven; and the computer can be used to monitor settings and provide an accurate readout.

SAM KETTLE

This kettle is one of the newest additions to our pilot plant equipment list. It is a 400-litre steam-jacketed kettle. It has a front-tilt system, a horizontal agitation system, and a cooling system. With the control panel, users can set temperature and agitation speeds. It has been used so far for products such as cooking potatoes, relishes, antipasto, and gravy mixtures.

EXPANSION OF SENSORY EVALUATION PROGRAM

Thanks to the co-operation of an industry partner, FNA Foods Inc., the Centre has been able to initiate an expansion of its sensory evaluation program.

Karen Erin, the sensory evaluation scientist, has been looking for ways to access typical consumers for the consumer sensory evaluations (over 50 last year).

"For a sensory evaluation involving consumers, you need at least 50 people to obtain a valid result," Erin says. "We don't have that many people working in our building, and in any event, our staff aren't typical consumers."



A CONSUMER EVALUATING CHOCOLATE MILK

As a result, Erin and Linda St. Onge, who helps Karen with many of the consumer sensory evaluations, are often faced with transporting everything they need to another government building in Edmonton. But that isn't an ideal situation either as they are usually working in a meeting room, where it isn't possible to test foods that need cooking or refrigeration. Water must be carried in from other areas of the building.

"Our colleagues in other buildings are really good about coming to help us out, but they get burned out doing evaluations," said St. Onge. And we also need a more complete demographic cross-section of the general population to have good data."

In late November 1998, the Centre, along with FNA Foods Inc., applied for and received a grant from Alberta Agriculture Research Institute (AARI) to set up a sensory evaluation centre in a public location on a trial basis. The space selected was in located in the Eaton Centre Food Court.

"Linda and I were overwhelmed," says Erin.

"Here was 1,800 square feet of space, with two sinks, counters, storage, a separate kitchen area, plug-ins along every wall and lots of space for tables. It had been vacant for a couple of years and needed work, but it had potential."

Erin and St. Onge, along with Bob Gibson, Murray Fierheller, Allan Hayman and Gabriel Chemello pitched in to get the area ready to pass the health inspection licensing requirements. Peter Davies, the Centre's facilities manager, had a new double sink and counter made, and arranged for an electrician and plumber to hook everything up. Equipment and furnishings were moved from Government Surplus and the Centre.

By January 16, 1999, the sensory area was ready for its first taste panel. While Erin continued work on a research project involving a trained panel, Jacqueline Gelfand helped St. Onge manage the taste panels at Eaton Centre for the first month. After that, Centre staff members, as well as staff from other part of Alberta Agriculture, Food and Rural Development took turns coming to help with panels.

"We all put in some really long days and we really appreciate everyone's help," says St. Onge.

From mid-January until mid-March, sixteen consumer evaluation panels were completed at the Eaton Centre space. Of the panels, nine were products requiring cooking, two needed refrigeration, one needed a specific age demographic and one consisted of three products served hot, one sample at a time.

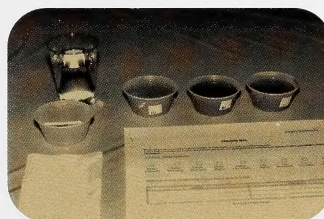
"We would have had to think twice about carrying out these panels without access to the Eaton Centre space," Erin says.

"Even though we didn't always get our 50 people, we were able to just continue with the same product the following day. Some days we did two different panels," adds St. Onge.

The Centre will continue leasing space in downtown Edmonton for the next year. It will also be establishing a data bank of potential panellists for panels requiring a specific demographic profile.

If your company is developing new products, this is a good time to book a sensory evaluation. With the Centre having its own facility and equipment, it allows for improved control over temperature and other parameters. It also mean a wide range of product can be handled.

The result is you will end up with some solid data to tell you how consumers rate the acceptability of your product, either on its own, or compared to competing products.



Contact your current project leader at the Centre, or call Karen Erin for more information.

A TASTE PANEL BOOTH

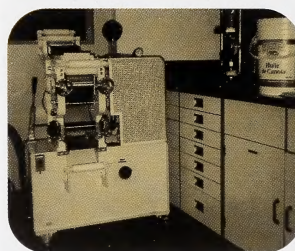
OHTAKE NOODLE MACHINE

Noodles in Alberta???

Who would possibly be interested in producing noodles in Alberta? Canada is one of the largest exporters of wheat in the world. It makes sense to develop varieties that will make good quality Chinese (Raman) and Japanese (Udon) noodles for several reasons:

- Promoting sale of our wheat in the oriental market
- Promoting foreign investment in Alberta for production of oriental noodles
- Developing high quality noodles by local companies for domestic and international markets.

Recently, the FPDC acquired an Ohtake laboratory noodle machine to fill this role. The noodle machine is capable of producing from 0.5 to 1.5 kg batches of noodles. It comes with a batch mixer, 150 mm rollers and two sets of cutters. The rollers are temperature controlled and can be monitored to determined pressure of the dough during production. The roller clearance can be adjusted



THE OHTAKE

There is an interest by Alberta Agriculture Food and Rural Development (AAFRD) and Agriculture and Agri-Food Canada (AAFC) plant breeders to develop wheat varieties for the noodle market. Since this noodle machine uses only small quantities of flour, it is ideal for use by the plant breeders. This machine can be used in collaboration with the Canadian International Grains Institute (CIGI). CIGI is partially funded by the Canadian Wheat Board and its main function is to promote end uses of Canadian crops such as brewing, baking and pasta and noodle making. The noodle machine will also find use in the fledgling functional food market. Noodles already have a healthy image and are well suited for the incorporation of nutraceuticals to produce a high value functional food.

to simulate a larger multistage production noodle machine which should allow for accurate scale-up. Since most of the parameters can be tightly controlled, this machine should be capable of producing a wide variety of high quality, reproducible products.

New Beef Products Initiative

On June 16, the Hon. Ty Lund, Minister of Alberta Agriculture, Food and Rural Development (AAFRD), announced that Alberta's beef industry is starting a major initiative that it hopes will position the province's producers and processors at the leading edge of the global beef market.

The Centre's Projects Manager, Bob Gibson, is team leader for a research program aimed at developing new beef products intended to improve the market position for Alberta Beef. The initial three years of the program are being supported by the Canada/Alberta Beef Industry Development Fund (CABIDF) and AAFRD will extend the project for an additional three years.

Gibson and the other members of the advisory group, all have extensive experience in the beef industry. The other members of the group are: Kathy Keeler, Beef Information Centre; Ken Gossen, Investment Development Branch; Wes Sawatsky, Strategic Market Information Team; and, Connie Zagrosh, Agri-Food Development Branch.

When preparing the proposal for this initiative, the group identified several consumption trends which provide opportunities for product development. The trends include:

- beef home meal replacements to meet consumer demands for ready to eat, heat-and-cook
- ready-to cook foods, such as marinated, seasoned beef strips, ready for stir-fry dishes

- ethnic flavors and preparation methods, such as Szechuan or ginger beef, souvlakia or kosher products
- restaurants looking for ready-to-serve beef, such as pre-cooked, sliced and portioned beef roasts due to a lack of skilled labor
- institutions experiencing needs similar to those of restaurants, with the additional requirement for variety, nutritional balance and cost control
- easier access to export markets, particularly to Pacific rim trading partners, for processed beef products rather than for raw commodities
- food safety becoming more important globally, and technology that addresses this issue will position Alberta beef favorably

"But, product development that responds to market needs is only part of the picture. We need to find new market opportunities and partners within those markets," Gibson says.

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DUTCH TREAT



MIRIAM QUATAERT WORKING WITH THE EXTRUDER

Technology exchange becomes more tangible when you can see and touch the results.

The Centre has enjoyed two recent exchange projects with the Agrotechnological Research Institute (ATO-DLO) in the Netherlands. Last fall, Ron Pettit, branch head, and Lou Normand, division director, signed a formal memorandum of understanding with ATO-DLO so these co-operative exchanges continue in the future.

In the spring of 1997, one of our food scientists, Connie Phillips, spent four months at ATO-DLO and last summer the Centre hosted Miriam Quataert for three months.

Quataert is a food engineer at ATO-DLO, where there are 600 employees and 250 scientists on staff. One hundred and sixty of those people work in food science. Quataert's exchange project involved the development of some pasta products with functional food properties, using our extrusion technology. The extruder, featured in the September 1998 newsletter, is the ideal piece of equipment for this kind of product.

Working with flax meal, pea fibre, barley beta-glucan and spirulina resistant starch, Quataert started her work in the product development lab where she made the noodles using a small home-sized pasta maker. When she was satisfied her formulation would work in larger quantities, she worked with Connie Phillips and

Gabriel Chemello, the Centre's processing technologist, to adjust the formulation to go through the extruder. Quataert was able to turn out spaghetti that looked fresh. It was then draped over racks in our smokehouse and dried.

After the initial production of the pasta, Quataert tested the cooking qualities. Several didn't cook up satisfactorily, but she chose three to be evaluated in a consumer sensory evaluation panel. The evaluation showed that the new functional pastas were satisfactory. Two new proposals on this topic have been written to extend the work.

In addition to her pasta project, Quataert was often out in the plant observing other interesting projects.

"It was great to see some of the equipment in use because at ATO we do research, but no production work," says Quataert.

Quataert maximized her three months in Alberta. She participated in most of Edmonton's summer festivals, and traveled to several other parts of the province.

She made three or four trips to the mountains, including the Thanksgiving weekend when her parents were able to join her in the Rockies. She also went with several Centre staff members for a weekend bike and hiking tour in the Jasper area. She saw the bison at Elk Island National Park, West Edmonton Mall, a hockey game, a bingo game and learned to line dance.

Exchanges with colleagues at ATO-DLO are ongoing. The Centre's meat scientist, Marek Gierus, stopped in for a visit and tour while on his holiday in April. Kevin Swallow, cereal specialist, plans to go in September to work on a project and projects manager Bob Gibson is scheduled to spend several days in ATO-DLO this fall.



SPAGHETTI DRYING IN THE SMOKEHOUSE

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PETER DAVIES

Facilities Manager

Peter Davies is one of only two staff members (Murray Fierheller is the other) who have been on board since the Centre's inception.

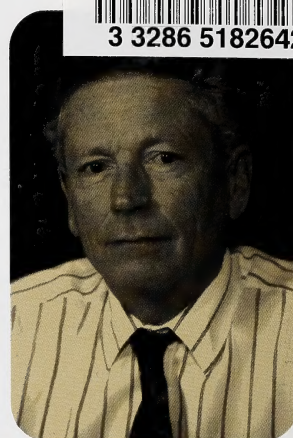
Davies joined Alberta Agriculture in 1973 in a product and process development role with the food research section of the Provincial Food Laboratory. At the time, it was located in Edmonton at the O.S. Longman Building.

It was Davies who was instrumental in bringing forward the concept of a fully equipped food processing development facility that would be accessible to the public. He was involved with the planning and construction of the building and the selection and purchasing of equipment. He was also the Centre's first manager of the process development section.

As the facilities manager, Davies is responsible for overseeing the overall maintenance of the Centre's processing equipment. This includes repairs or adjustments to the large pieces of equipment and, in conjunction with Alberta Public Works, the maintenance of the building itself. He also co-ordinates the selection and purchase of new equipment and arranges for the installation of the larger pieces. This task often calls for the services of the Centre's engineer, Jimmy Yao, and a team of electricians, welders, pipefitters and millwrights.

Davies also co-ordinates the clients' use of the pilot plant and interim processing facilities (both space and major pieces of equipment). His straightforward approach to this scheduling challenge makes it work smoothly. He keeps a large calendar in his office and Centre staff use it to book pilot plant time for their clients. If there are conflicts or overlapping requests for the same space, Peter often suggests a way to rearrange the equipment or dates to accommodate both clients. This year the Centre has had over 600 pilot plant days booked.

The purchasing of supplies and billing of clients are also overseen by Davies. His well-oiled procedure contributes to a good tracking system and accountability. To keep things running smoothly, the rest of the staff may receive the occasional reminder to, "do the paperwork first!"



New Beef Products Initiative continued from page 4

To reach these objectives, the research plan involves two coordinated programs.

Product Identification and Market Intelligence

This initiative works in conjunction with the Beef Information Centre and Alberta Agriculture, Food and Rural Development's Marketing Services Branch to identify market opportunities and evaluate issues of access and competition. New product ideas will be identified.

Development of New Beef Products

This initiative provides technical resources for the development of new products, processes and packaging technologies, along with sensory evaluation to assess consumer acceptance. It also includes training programs to transfer the technology to Alberta industries. New products will be developed with industry partners.

"This initiative will be industry-driven," says Bob Gibson.

The team is currently developing criteria and management protocol for project requests that come in from processors, buyers or distributors, and industry or government organizations. Approval criteria will include such things as the potential for increased beef consumption and feasibility for commercialization.

Using CABIDF funds, additional meat scientists will be hired to work on development projects with industry. Gibson expects most of the work to be co-ordinated through the Food Processing Development Centre in Leduc.

"We are definitely pleased that this initiative is going ahead and we're working hard to get everything in place so we can begin putting new Alberta beef products on the market," Gibson says.

"This new research effort represents a tremendous opportunity to increase the consumption and marketability of Alberta beef through new product development," says Minister Ty Lund. "We are pleased to be able to work with CABIDF to extend the time frame of the research."